

Laparoscopic closure of acutely perforated duodenal ulcer - an early experience

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Abstract

Laparoscopic closure of an acutely perforated duodenal ulcer is an alternative procedure to open surgery. With proper training and experience this procedure might overtake laparotomy and simple closure thereby reducing the post operative morbidity in terms of reduced wound pain, short hospital stay, likely reduced wound sepsis and hernia occurrence and post operative chest complications. This article describes four patients with acute perforation of duodenal ulcer who were submitted to an emergency laparoscopic repair.

Introduction

The use of the laparoscope in General Surgery has added a new dimension to the minimally access surgery and with the passage of time more challenging procedures^{1,2,3} are undertaken which previously were managed with open surgery. This article describes four cases which had a diagnostic procedure carried out through a laparoscope which progressed naturally to a therapeutic one. The operator was previously competent at laparoscopic procedures.

Patients and Methods

Four consecutive male patients (mean age 59 years, range 50 -76 years) presented with a clinically suspected perforated duodenal ulcer during day time admission hours. Following appropriate resuscitation and preparation for laparoscopic examination which include nasogastric tube, urinary catheterization, TED stockings, low molecular weight heparin and broad spectrum antibiotics, all were managed laparoscopically within four hours of admission.

Under general anaesthesia pneumoperitoneum was established using Veress needle inserted in the infraumbilical position. Two laparoscopic ports of 10mm and one of 5mm were inserted as shown in the diagram.

In all four patients, the typical bile stained peritoneal fluid of an upper GIT perforation was observed and aspirated with an irrigation-aspiration cannula and an obvious anterior perforated duodenal ulcer identified. There was no free solid matter found in the peritoneal cavity in any of the patients.

In the first three cases this perforation was closed using two 3/0 linen suture on a semi-straight needle and the fourth case using 2/0 linen on a ski-needle- In addition a small piece of omentum was attached over the sutured perforation by using the long ends of these sutures. Initially two graspers were used to hold the needle and tie the simple instrument knots but subsequently use of a needle holder was found to be easier.

The urinary catheter was removed post-operatively a little later than normal in these elderly patients, the nasogastric tube left in situ for 24 hours and intravenous cimetidine continued until oral feeding commenced.

Results

Three patients made uneventful post-operative recovery recommencing oral feeding within two to five days of their procedure and were discharged within six to eight days post-operatively on oral cimetidine for a period of six weeks. Follow-up gastro-scopies on two of these cases seven and eleven weeks after their discharge showed healed duodenal ulcer in both but spotty duodenitis in one and hence was advised to remain on oral cimetidine for a further period of six weeks. One case had no follow-up gas-troscopy since his return to England but is symptom free.

The fourth patient reperforated on the ninth post-operative day and at laparotomy was found to have a grossly contaminated

peritoneal cavity containing solid food particles and a much bigger ulcer crater. Simple closure of this ulcer was attempted but the patient subsequently died four days later from septi-caemic shock.

Discussion

Open surgical procedure is the accepted method of treatment of a perforated duodenal ulcer and the choice lies between simple closure using omental patch or a definitive procedure like truncal vagotomy and drainage. With the advent of laparoscopic surgery a new treatment modality is added to the treatment of a perforated duodenal ulcer which is simple and requires no additional special instruments other than the standard equipment already available in the laparoscopic cholecystectomy set.

As surgeons are becoming more experienced and confident with laparoscopic techniques, not only laparoscopic closure of the duodenal perforation might become a standard procedure 'but extension of such a procedure like truncal vagotomy^{2,3} or highly selective vagotomy carried out at the same time is a real possibility. Also this method of management does not preclude further surgery by way of scars or adhesions etc. and may well be undertaken electively at a later date if the clinical condition warrants.

All four patients had a degree of chronic obstructive airway disease. Therefore the absence of the large upper abdominal incision and its associated pain and hence avoidance of narcotic analgesia went a long way in preventing any chest complications and an early recovery.

The very high mortality of 25% in our series of four patients may be attributed directly to the technical failure of the procedure. There are a number of possible factors which may have contributed towards such a failure e.g. inadequate size and depth of suture bite, damage to suture material, insecure omental plug, loose knots or inadequate hold of sutures in chronic inflamed tissue- Newer needles and knotting technique and devices should improve these possible inadequacies.

None of the four patients had a past history of any upper GIT symptoms and none of them had any precipitating cause for peptic ulcer disease like drug ingestion (NSAID or steroids), heavy smoker or alcohol abuse. The use of laparoscopic procedure in these patients can be interpreted as the extension of the medical treatment and a formal surgical procedure can be undertaken in future if further medical management fails.

It is our opinion that the hospital stay time and morbidity and mortality will be reduced further as our confidence with their management increases. The delay in discharge in one of our patients was due to urinary retention but he was able to continue his journey home without any further problems.

All of these patients had an early intervention by a surgeon competent in laparoscopic techniques and during normal operating list hours. The question arises about management of such cases by junior staff and the co-operation of 'on call' nursing staff out of normal hours and is being addressed with relation to

other similar emergency laparoscopic procedures.

References

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